NON-PUBLIC?: N
ACCESSION #: 9006010187

LICENSEE EVENT REPORT (LER)

FACILITY NAME: Callaway Plant Unit 1 PAGE: 1 OF 4

DOCKET NUMBER: 05000483

TITLE: Reactor Trip Due to Loss of Main Generator Stator Cooling Water Instrumentation Caused by a Blown Fuse
EVENT DATE: 05/01/90 LER #: 90-005-00 REPORT DATE: 05/30/90

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: 1 POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: J. D. Blosser, Manager, Callaway Plant TELEPHONE: (314) 676-8190

COMPONENT FAILURE DESCRIPTION:
CAUSE: SYSTEM: COMPONENT: MANUFACTURER:
REPORTABLE NPRDS:

SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT:

On 5/1/90 at 1331 CDT, a reactor trip, an Auxiliary Feedwater Actuation, and a Feedwater Isolation occurred due to a turbine trip on a loss of main generator Stator Cooling Water (SCW) instrumentation. The plant was in Mode 1 - Power Operations, 100 percent reactor power, at normal operating pressure and temperature.

The SCW low flow turbine trip signal and subsequent reactor trip signal were received during the calibration of the SCW inlet conductivity meter. During restoration of power to the conductivity meter, a conductive foreign particle created a dead short across the power supply leads of the meter assembly. The subsequent transient caused the failure of a 10 amp fuse resulting in a loss of main generator SCW instrumentation power. The loss of instrumentation power initiated a turbine runback at 1328.

With the "loss of SCW flow" signal still present, the main generator protection circuitry initiated a turbine trip at 1331.

Several generator protection SCW runback modifications are being implemented to alleviate false activations and enhance the reliability of the system.

END OF ABSTRACT

BASIS FOR REPORTABILITY

On 5/1/90 at 1331 CDT, a turbine trip and Reactor Protection System (RPS)(1)_/ reactor trip occurred during calibration of the main generator Stator Cooling Water (SCW) inlet conductivity meter.(2)_/ As a result of the RPS actuation, a Feedwater Isolation and an Auxiliary Feedwater Actuation were generated by design. Since the Engineered Safety Features (ESF) actuation was not part of a preplanned sequence during reactor operation or testing, this event is reportable per 10CFR50.73(a)(2)(iv).

PLANT CONDITIONS AT TIME OF EVENT

Mode 1 - Power Operations
100 percent Reactor Power
Reactor Coolant System (RCS)(3)_/: temperature (average) - 588 degrees; pressure - 2245 psig.

DESCRIPTION OF EVENT

On 5/1/90, utility Instrument and Control (I&C) technicians were troubleshooting and calibrating the main generator SCW inlet conductivity meter. The meter had been removed in order to repair the high range alarm. The technicians completed the meter calibration and were reinstalling it. Upon reconnecting the power supply, a number of local alarms were received.

At 1328, the Control Room licensed operators were alerted to a turbine runback initiation and observed SCW pressure at zero. To restore proper pressure indication, the operators started the second SCW pump. SCW pressure indication remained at zero, however, the SCW outlet temperature indicated normal. After noting the operating conditions, the main turbine generator was placed in standby to stop the runback. The turbine runback was stopped at 915 MW electrical. At 1331 after stabilizing power, a turbine trip occurred due to a locked-in SCW low flow signal per the generator protection circuit design.

The subsequent reactor trip occurred due to a turbine trip above 50 percent reactor power (e.g. P-9 interlock). The licensed operators stabilized the plant in accordance with plant procedures.

ROOT CAUSE

The cause of this event was the creation of a dead short due to a conductive foreign particle across the power supply leads of the SCW conductivity meter assembly. This was based on evidence of a short circuit on the surface of the input board power supply leads. The subsequent short circuit transient caused the failure of a 10 amp fuse resulting in a loss of main generator SCW instrumentation power (i.e. a SCW low flow signal with the current to flow comparator de-energized).

A contributing factor was the lack of separation of the control and instrumentation power source and limited redundancy in the SCW runback circuits.

CORRECTIVE ACTIONS

The blown fuse was replaced and the meter assembly was cleaned and tested. In addition, a number of measures are being implemented to enhance system reliability and prevent a similar event.

Corrective action to preclude recurrence of this event will be prevented by:

1. The SCW runback circuitry will be provided with a separate 120VAC supply (4)_/ and will be removed from the alarm and indication supply source.

Other corrective actions to be taken to improve the main turbine generator reliability include:

1. The SCW low pressure runback will be defeated based on redundancy of protection.

2. The SCW runback logic will be changed to require two of three actuations for a runback to be initiated. This will be provided for SCW high temperature and SCW low flow conditions.

3. The SCW runback logic will be modified to not activate on a loss of instrument power. A loss of instrument power will be

alarmed in the Control Room.

SAFETY SIGNIFICANCE

The ESF systems (5)_/ involved in the event performed as required. There were no detrimental effects on plant equipment as a result of the actuations and this event posed no threat to the health and safety of the public.

PREVIOUS OCCURRENCES

None.

FOOTNOTES

The system and component codes listed below are from IEEE Standards 805-1984 and 803A-1984, respectively.

(1) System - JC
(2) System - TJ, Component-MTR
(3) System - AB
(4) System - JX
(5) System - JE

May 30, 1990

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

ULNRC-2218

Gentlemen:

DOCKET NUMBER 50-483
CALLAWAY PLANT UNIT 1
FACILITY OPERATING LICENSE NPF-30
LICENSEE EVENT REPORT 90-005-00
REACTOR TRIP DUE TO
LOSS OF MAIN GENERATOR STATOR COOLING WATER
INSTRUMENTATION CAUSED BY A BLOWN FUSE

The enclosed Licensee Event Report is submitted pursuant to 10 CFR 50.73 (a) (2) (iv) concerning an unplanned reactor trip which occurred during calibration of the main generator stator cooling water inlet conductivity meter.

J. D. Blosse
Manager, Callaway Plant

TPS/JGB/lrj

Enclosure

cc: Distribution attached

ATTACHMENT 1 TO 9006010187 PAGE 2 OF 2

cc distribution for ULNRC-2218

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